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ABSTRACT

The use of cooperative learning in a middle school computer laboratory was studied. Cooperative learning helps develop oral and group skills in middle school students as it allows them to socialize in an arena that does not always condone socializing. In this study, 4 heterogeneous groups were formed from 52 students, with male and female partners in each group. The task was the incorporation of a virtual field trip into group projects for social studies. Students were assigned the planning and creation of virtual travel to a foreign country, and they were to report to the computer laboratory once a week for this project. At the end of the virtual field trips, students were asked to apply the lessons they had learned to an individual experience. This exercise, a "visit" to an individual location, served as the application part of the 9-week term grade. An overall result of the project was that the computer skills of all students improved. There was a significant relationship between cooperative learning and the students' academic achievement. There was no significant enhancement based on group demographics and gender on the learning of computer skills. The high-achieving students were less likely to enjoy the cooperative learning experience, but most students enjoyed working with partners and taking the virtual field trip. Students who did not have computer access at home were able to close the gap to approach their more experienced classmates during the learning project. Student responses from the interviews and the survey confirmed that most had an increased interest and success in learning new computer skills. The implications of the findings for the design of cooperative learning for middle school students are discussed. Eight appendixes contain the student survey and materials used in its scoring and other aspects of the study. (Contains 20 references.) (SLD)

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Using Cooperative Learning in a Middle School Computer Lab

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USING COOPERATIVE LEARNING IN A MIDDLE SCHOOL COMPUTER LAB

Middle school students as a rule are a breed of student different from those found in elementary schools and high schools in the United States. They are too old to be taught using an elementary curriculum and too immature to be taught as high school students. Therefore, they must be taught in a manner that is conducive to their learning; finding teaching strategies that take advantage of the four developmental stages found in middle school students becomes a necessity. The developmental stages that are present in middle school students are social, emotional, intellectual, and physical. These stages must be addressed in the curriculum in order for middle school students to succeed.

Middle School Developmental Stages

The first developmental stage found in middle school students is the social stage. This stage sees the young adolescent shift allegiances from parent and teachers to peers and the seeking of peer approval and support. These students are preoccupied with appearance and behavior and the acceptance of their classmates and peers. They work and play better as a group rather than as individuals. Ostracism from the group is the worst kind of fate a middle school student can face. They therefore, want to be part of the crowd and strive to do so in their social lives. Educators need to provide young adolescents with skills necessary to cope with physical and social changes that may lead to inappropriate behaviors (Carnegie Council on Adolescent Development, 1996).

The emotional stage in the development of the middle school students consists of the desire for independence from authority and need for structure in their tumultuous lives. Sometimes the students want to be nurtured, and sometimes want to be treated as a young adult capable of making their own decisions. Often they are told to act like young

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adults when they are incapable of doing so because of immaturity or under developed social skills. Their lack of skills or physical development can cause low self-esteem and thus further emotional stress. Rather than condemning young adolescents educators need to work with them to make informed and mature decisions in their quest for independence and freedom (Carnegie Council on Adolescent Development, 1996).

The third developmental stage of middle school students is intellectual. They have started to leave the concrete phase found by Piaget in elementary students (ages 7-12) and now seek to discover, inquire about, and explore the world around them. The natural curiosity of these students to experiment must be utilized by their teachers. The days of worksheets and concrete learning of elementary classrooms are gone. The secondary classroom methodologies (lecturing, films, movies, and etc), ones that do not meet the needs of middle school students (who can't sit still for 50minutes to take notes or watch a film), have yet to arise. Therefore, the needs of young adolescents will be met only when educators provide educational experiences that cater to their strengths: curiosity, exploration and inquiry (Manning, 1994/1995).

The last developmental stage found in middle school students deals with physical and hormonal changes which often make concentration on school and academics difficult. The distraction of noticing the opposite sex's physical change or the lack of change in their own bodies creates periods of low self-esteem and places academic success on the back burner of life. The young adolescent is restless and extremely fatigued due to growing and hormonal changes. Sitting for long periods of time becomes difficult and even painful in small or uncomfortable desks. Educators need to be aware of

these changes and help young adolescents deal with them (Carnegie Council on Adolescent Development, 1996).

When looking at all four stages as a whole and their affect on middle school students we see students who are seeking social and emotional stimulation while undergoing physical and intellectual change. Teachers need to utilize strategies that enhance the strengths of these middle school students and lessens the traits that hinder their academic success.

Elements of Cooperative Learning

Cooperative learning is such a strategy that appears to be tailor made for the strengths of middle school students (Slavin, 1996) and allows their weaknesses lessened. Cooperative learning is a learning strategy that utilizes 4-5 students in a small group setting to accomplish an interdependent goal or task. Cooperative learning when implemented correctly, by adhering to the five basic elements of cooperative learning: face-to-face interaction, development of group and social skills, individual accountability, positive interdependence, and self and peer evaluation (Slavin, 1988).

The first element deals with face-to-face interaction (Johnson & Johnson, 1987). This places students in small groups knee-to-knee and face-to-face to accomplish a particular goal or task. The students depend on each other to assist in the completion of the group goal and doing their fair share of the task.

In the second element needed to meet the requirement for cooperative learning is the development of social and group skills. This element of cooperative learning responds to the students desire to be social or amongst their peers in school. This element also takes into consideration the desire of middle school students to socialize and

teaches them the correct way to work within groups. This element takes a desire and develops a proper character trait (Johnson & Johnson, 1987).

The third element required for successful cooperative learning is individual assessment and accountability of students. This element helps develop the intellectual stage in middle school students, which makes students accountable for their own-recorded grades but uses group processing to accomplish the learning. Those students who are the better students can socialize in their group, assist those who are not strong students, without affecting their own personal grades, thus benefiting from both the strategy and the developmental stage. Those students who are less talented will benefit from working with students who have mastered the needed skills. (Johnson & Johnson, 1987).

The fourth requirement for a group lesson to be cooperative is positive interdependence of goals, roles, and learning outcomes. The students must seek to complete a common task, project, study for a test, or complete something where all students in a team or group must be a part of the whole and not individualized (Johnson & Johnson, 1987).

The last element of cooperative learning is self- and peer evaluation for group processing (Johnson & Johnson, 1987).

Cooperative Learning Benefits to the Middle Students Developmental Stages

There are several benefits (listed without regard to any order) to using cooperative learning and especially using cooperative learning with middle school students. The first benefit of cooperative learning is in academics:

- by promoting higher level of thinking skills (Schwartz, Black, & Strange, 1991).
- by stimulating critical thinking and helping students clarify ideas through discussion and debate (McCarthey & McMahon, 1992) .
- by promoting active learning rather than passive learning outcomes (Tannenberg, 1995).
- by promoting student responsibility of the learning process (Felder, 1997).
- by promoting higher achievement and attendance (Felder, 1997)
- by increasing student retention (O'Donnell & Dansereau, 1992).
- by increasing the on-task time of the student (Sharan, Sharan, & Gentile, 1997).
- by addressing the students' different learning styles (Midkiff & Thomasson, 1993).
- By promoting diversity acceptance among the students as members of cooperative teams (Holliday, 2000).

The middle school students' desire to learn in groups and to be active learners are two of the criteria that are promoted by cooperative learning. Cooperative learning helps develop oral and group skills in middle school students while allowing them to socialize in an arena that does not always want socializing, the classroom. Cooperative learning also helps make the students responsible for their own learning and weans them away from considering teachers as the sole source of knowledge and understanding. Thus they stay on task more and are less disruptive. This is accomplished by peer pressure within the group, hence making for more productive classrooms. The cooperative learning strategy that is most effective for laboratory and design projects for middle school students is Jigsaw (Felder, 1997: Holliday, 2000). Jigsaw is a cooperative learning

strategy that utilizes teams and groups to learn material and/or accomplish task. It allows for the intellectual stimulation that the students need but in a structured environment that they require.

The social developmental stage of middle school students is benefited through cooperative learning by:

- promoting student-faculty interaction and familiarity (Cooper, 1987).
- promoting social interaction and correct group behavior and interpersonal relation skills (Cohen & Cohen, 1991).
- promoting responsibility to each other (Stahl & Van Sickle, 1992).
- promoting diversity understanding (Holliday, 2000) .
- promoting empathy towards others (Johnson & Johnson, 1987).
- promoting the cooperation of all ethnic and special groups in their work and social encounters (Johnson & Johnson, 1987).
- promoting the modeling of appropriate behavior for society and the work environment (Sandberg, 1995).
- promoting team building and a team approach to problem solving while maintaining individual accountability (Johnson & Johnson, 1987).
- promoting social and academic relations well beyond the classroom (Felder, 1997).

The social developmental stage is one that teachers need to effectively address in order to move from teacher focused education to a more student centered. Knowing how students operate more effectively in the classroom will allow teachers to design lessons that are middle school student centered.

The benefit of cooperative learning to the middle school students' emotional development is in teaching and helping them to learn how to deal with the pains of maturation. This is accomplished by:

- building self-esteem (Johnson & Johnson, 1987; Slavin, 1988).
- promoting student satisfaction with the learning experience (Turnure & Ziegler, 1958).
- promoting mastery (Hertz-Lazarowitz, Kirkus, & Miller,1992).
- encouraging students to seek help and tutoring without facing ridicule (Hertz-Lazarowitz, Kirkus, & Miller,1992).
- reducing anxiety in the classroom (Kessler, Price, & Wortman, 1985).
- developing a more positive attitude towards teachers (Johnson & Johnson,1987).
- setting higher expectations of students and teachers (Johnson & Johnson, 1987).

The maturation process in these students remains a hurdle for them to overcome in order to be successful. The successful teacher, who can take into account the emotional changes that are occurring in their students, will develop lessons and strategies that play to this stage as a strength and not weakness.

The last developmental stage is physical changes that are taking place in students. Cooperative learning indirectly benefits the physical nature of middle school students by allowing them to move around the room which benefits the restlessness and fatigue found in young adolescents. It does mix the sexes so that cross gender respect and socialization is increased (Holliday, 2000). Young adolescents enjoy cooperative learning because of the transition from whole group to small group allows students to move around or break off into groups and thus does not require them to sit for extensive periods of time in the

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class. Physically middle school students are at different stages and thus the grouping of students into heterogeneous groups teaches them to respect each other and ignore physical differences. This allows the students to concentrate on learning and not physical problems.

Implementing Cooperative Learning in the Computer Lab

Since competition does not motivate many middle school students and many feel overwhelmed and unable to cope with demands of competition the use of cooperative learning plays in to their strengths (Manning & Lucking, 1994/1995). Socializing and cooperation are key elements for teachers to use in order to motivate them in the computer lab as well (De Jong & Hawley, 1995).

Using technology in the classroom or computer lab settles the basic curiosity of middle school students for new information but in a different format. Students who do not feel comfortable using computers can get help without the feeling that they are inadequate. The pressure of succeeding is reduced. That is the magic of cooperative learning "the students sink or swim together".

Implementation

In a suburban middle school in northwest Indiana a second year teacher of computer science for seventh and eighth graders assisted in the research on cooperative learning in the middle school computer lab. The teacher selected the criteria to be used in forming the groups, after reviewing the literature with the researcher. Together they decided on a heterogeneous mixture for the groups. The four member groups consisted of both male and female partners. The further delineation of the groups was accomplished by selecting one high achiever (chosen based on possessing the highest

degree of computer skills), two middle achievers (average computer skills) and one low achiever (little or no skills) based on previous assessment. The groups selected by the teacher based on the above criteria (to avoid friends getting together) then chose team names. The team members were assigned roles or tasks to be preformed on a rotating basis. The leader, makes sure everyone stays on task and gets a turn to perform the task; the gopher, the person who picks up the teams materials; the recorder, the person who records the teams data; and the operator, the person who actually carries out the computer operations.

The task at hand was the incorporation of a Virtual Field Trip (VFT) into group projects for social studies. The students were assigned to plan, create, and virtually travel to a foreign country on a field trip. The initial stage saw the teams meet in the classroom to choose their respective locations. They were to set up a schedule for their visit to their chosen location (Appendix A). They were to divide the task into four segments with each team member taking one of the segments (Jigsaw IV developed by Holliday,1995). The segments were labeled "A", "B"; "C", and "D". All the "A's" met together, the "B's", the "C's", and "D's" and so forth (Appendix G). They were to discuss each segment individually and then meet back with their home teams and proceed to prepare for their Virtual Field Trip (VFT).

The teams were to report to the computer lab once a week (for this project) and review the lab rules (Appendix C). Upon reviewing the rules the team members were assigned their task on a rotating basis (leader, gopher, recorder, and operator). The team task assignments were rotated every week with no one holding any task assignment more than twice. The duration of the project was one nine-week term. The teams were assigned

to two adjacent computers in the lab, and using the schedule previously developed the teams began to embark on their VFT journey.

The computer class during Step One had the students determine their site from the following web page: http://surfaquarium.com/virtual.htm. Once they had a site chosen the students were then assigned the task of reviewing their site for acceptability (Appendix D). Step Two saw the student's sites rated by the members of each group ("A", "B", "C", "D"). Each team reviewed the other team's chosen site for acceptability. Once this task was completed the students developed a individual KWL Chart for each location (Appendix E). The third step developed a KWL Chart, where the "K" or "What they **Knew** about the location"? ; the "W" or "What they **Wanted** to learn about the location"?; and the "L" or What they **Learned** about the location , the first two columns were completed prior to the virtual field trip. The third or last column would be determined after the VFT. Upon the completion of the KWL Chart the students were then to develop questions to be utilized on the VFT.

In Step Four questions were developed by the team members to be used to navigate the web site. The directions and questions were specifically designed for the individual sites that were to be navigated (Appendix F). Therefore, the only access available to the user was the site address and the questions/instructions. These were made available to the other teams so that they could assess the reliability of the sites and questions. Once all sites had the necessary questions developed and verified as acceptable, Step Five was next.

In Steps Five through Seven the teams looked at the other teams' sites and questions and proceeded to navigate the web sites and answer the questions thus actually

taking the VFT. Once these Virtual Field Trips were navigated and the questions answered the results were returned to the proper teams for assessing the accuracy of the responses. The home teams then presented their findings to the class and ranked the teams according to the number of correct responses. The second part of the presentation was the actual presenting of the correct answers to the class and the filling in the third column of the KWL Charts (What did you learn?). The final step in this learning process was the individualized assessment or individual VFT taken by each student. In this step the students were to apply the knowledge learned by taking a group VFT to an individual experience. Each student was assigned a different location to visit and a general set of questions to answer from their respective sites. This assessment was used as the application part of their nine-week term grade.

The students were then administered a survey to determine their over all satisfaction with the cooperative learning computer group project (Appendix B). This qualitative measure (survey) and quantitative measure (the application grade) were used to determine the success of the project in this middle school computer lab.

Results

The overall result from the protect saw the computer skills of all students improve. The more advanced computer literate students' skills were enhanced because they were able to explain the procedures to their teammates and walk them through the various steps. Actually actually using the skills taught during the VFT project and following the higher achieving students assistance strengthened the intermediate skilled computer users' abilities. The lower or nonexistent skilled computer user was able to add to or develop skills necessary to individually navigate the Internet and travel the Virtual

Field Trip. All these students were able to accurately find and answer all the questions on their individual VTF.

Student Attitudinal Survey

The greatest measure of success for the project implementing the cooperative learning strategy Jigsaw IV in a middle school computer lab was the survey. This survey addressed the developmental stages of middle school students. The students responded to a qualitative survey (Appendix B) measuring their satisfaction with using cooperative learning as a tool to learn how to take a Virtual Field Trip.

The final instrument administered was the attitudinal survey given to the students after they finished the project. This allowed the students to speak freely and anonymously about their thoughts of cooperative learning. The survey consisted of fourteen questions with responses: strongly agree, agree, no opinion, disagree, or strongly disagree.

In addition to the pre-designed responses, students were also "asked" Why? A copy of the survey is located in Appendix C. The student responses to the survey are recorded in Table 1. The discrepancy in the number of responses to the questions is the result of student omissions.

Item One. The first inquiry sought the students' most common responses to the statement "I learned more computer skills in small groups than in a regular classroom setting" and "Why?" The students answered: a) 50 percent (26/52) either agreed or strongly agreed. b) Twelve students indicated that they had no opinion about cooperative learning. The most common positive responses were: students felt that they "Can transfer information between individuals and learn more" through cooperative learning; or the

students felt that they "Talked (discussed) about it more ways than the teacher did" in small groups; or that cooperative learning was successful " . . . because it helps you learn." The customary answer given by those students with "no opinion" was ". . . because I learn well both ways." c) The most frequent negative responses for those who disagreed (14/52) with the question are as follows: "Because all my teammates wanted to do was copy" or "I am not really listened to in small groups."

Item Two. The second statement evaluated the students' enjoyment of working in small groups on the computer rather than working on the computer by themselves. Again, 35/51 (approximately 70%) were either in strong agreement or agreement with the statement. Ten students found it not as boring as traditional, and easier to ask for help from fellow students rather than the teacher. Four students liked the idea of talking the answer out in small groups while nine students thought that the "work got done and that they liked to listen to others' ideas". There are only four students with no opinion and twelve students who disagreed with the statement. Those who disagreed felt ". . . they liked to work alone" and others again felt that "Some of the other students did not pull their weight in the groups."

Table 1

Student Answers to Survey on Cooperative Learning

A=Strongly Agree
B=Agree
C=No Opinion
D=Disagree
E=Strongly Disagree

(highest possible number of responses=52)

QUESTION NUMBER	A	B	C	D	E	TOTAL
1	16	10	12	11	3	52
2	16	19	4	10	2	51
3	10	13	10	13	3	49
4	9	21	9	9	2	50
5	11	22	11	4	1	49
6	18	14	8	7	2	49
7	0	6	8	25	11	50
8	2	6	13	19	12	52
9	13	13	10	11	2	49
10	7	11	21	5	5	49
11	10	13	14	9	4	50
12	1	5	7	25	11	49
13	10	18	12	7	1	48
14	9	20	15	4	1	49

Item Three. Statement three ascertained if the students felt that cooperative learning helped them to learn quicker and retain more for the computer test. The responses to this statement were closer to each other in numbers than previous responses. Those who agreed were 23/49 (47%) while those who disagreed were 16/49 (33%). The

greatest increase came from those with no opinion, which was tabulated at 10/49 (20%). Four respondents felt it did not help for tests, three felt their grades actually lowered, seven felt the questions were too hard. Over all, they did not like the group computer review. Those students who responded that they liked the group work and felt their grades rose numbered five. Those students answering favorably to cooperative learning in this section also had more diverse answers such as: ". . . learned more in groups;" they ". . . reviewed till they knew material;" and ". . . shared work." The students who felt they had no opinions answered they "Just did not feel that it helped."

Item Four. The fourth item sought to find if the students felt that they had learned from each other during cooperative learning. Thirty students agreed but only nine felt that they could strongly agree with the statement. The students felt that they ". . . learned something from the experience because they got along good and worked well together (17/50)." The rest of those that agreed ". . . it helped," "It was easier on them," "The teammates learned from me" or that "We learned more when we played the games." Eleven students did not agree that they learned from others because, ". . . did not know if a teammate's answer was right," "It just did not help at all," "My group did not care" or "The teams did not want to discuss the information, but everything else." Those students who had no opinion (9) again just did not see any progress.

Item Five. The recorded responses to item five saw most agree with the statement. The actual question inquired whether the students felt the group competition was appropriate for the study? They answered in the following manner: a large majority of the respondents stated (33/49) that they agreed with the statement (11=strongly and 22=just agreed), 11/49 had no opinion and only five disagreed with the statement. The

strong responses indicated that seven felt that if your group worked hard and together they deserved an award, eight felt that when competing against other groups you worked harder for rewards and nine said it gave you something to work toward. Four other students said that it was fun to compete with others. The no opinion respondents said that they did not win anything so they did not care. Those that did not like competition or felt that they did not need awards were among those that disagreed.

Item Six. Item six addressed the issue of cooperative learning's value and its use in other classes. Thirty-two out of 49 students (65%) agreed (18=strongly) with the statement for the following reasons: "It helps you to learn (11)," "Some classes are too hard to attempt by myself (seven)," and "Better chance to learn and participate in activities that help you learn (five)." There were eight students who had no opinion, stating that they felt this way: "I was making the same grade but had fun anyway," and "It was fun, but some people did not work well with others." Those that disagreed either strongly or just disagreed did so because "I do not work well in groups," or "You can not always pick responsible people for your group" 'or "Prefer to work alone."

Item Seven. A change of pace was attempted in item seven by determining if cooperative learning made learning computer skills boring. The students believed that the opposite was true with 36/50 or 72% disagreeing with the statement. Ten students felt "It made learning more fun," while the rest felt that: "I liked it--it helped a lot," "I don't like lecturing," "It does make it better," or "Knew it would be interesting." Eight students had no opinion and made statements like: ". . . not boring, but did not learn much," "Classes already were dead," or "Lack of understanding what to do" (this person was absent a lot). Only six people disagreed and none of those strongly. These students

expressed feelings like: "I don't like group work at all," or "We would not learn anything anyway," or ". . . too much work."

Item Eight. Thirty-one out of 52 (60%) students disagreed with statement number eight which evaluated whether or not they perceived that their classmates took advantage of them in group work. Thirty-nine percent of those who agreed stated, "In our group, we all did our share of the work." Several others stated, "We all worked together to find the answers to the questions." Those students (13) who had no opinion felt that ". . . some did-some did not," or felt that ". . . half the group did not work and only a few carried through" or "Some did not study so they failed." There were only eight students who agreed with the statement and these students felt that it was true "Because it happened to me with several of my teammates." Further investigation showed these students to be high achievers.

Item Nine. The highest number of responses to question nine was recorded by those students who agreed with the statement "My opinion of my classmates changed because of cooperative learning." There was a 50/50 split between those who strongly agreed and those who only agreed with the question (13 each). Some students replied, "(they) found their classmates to be more intelligent than they thought," "I think I learned more about people working in my group," or "I found some students to be very nice." Ten students had no opinion at all. "Some did and some did not," or "Some had more fun than I did or thought I would" were the answers most commonly given by those who had no opinion. Those who disagreed with the statement (13) felt that "Working in groups showed me that some people were not willing to do any work," or "I don't work

well in groups," or "No, my opinion stayed the same because I know how teammates are."

Item Ten. The highest number of students (21) had no opinion toward statement ten that stated they worked better with diverse students because of cooperative learning. Five students stated, "They behaved that way already," while seven said they felt "It does not matter who I work with." Many others stated "I don't judge people by race" or "I enjoy working with people of all races." One student even stated she did not have minority students in her group. The eighteen students who agreed with the statement stated that they did so because "I learned color does not matter, just the personality" or "Some students are pretty cool once you get to know them" or "I learned how they worked in groups." Those students who disagreed with the statement (10) disagreed because "I don't like the way other students look, but like the way I look" or "People of other races took advantage of me." These are the answers from students that are the most revealing.

Item Eleven. The replies of the students to number eleven which stated "I like the way my computer teacher taught his Virtual Field Trip lesson, using cooperative learning, as compared to my other classes" were as follows: 23 agreed, 14 had no opinion, and 13 disagreed. Those who were in agreement with the statement believed "Everyone worked together," "We learned a lot more," "Regular classes are boring--cooperative learning is more fun," "I made my highest grade in geography," "Teacher was better organized," or "It made it geography easier." Fourteen students had no opinion about the teacher's ability to teach geography in cooperative learning. Some stated, "The teacher had an attitude," or "I don't like the way my teacher teaches," or "I don't like my teacher," or

"Needed more time to make a decision." The 13 who were in disagreement with their classmates replied, "They like whole class instruction better," or "The teacher wanted us to learn as individuals."

Item Twelve. Item twelve attempted to invalidate one of the major complaints of cooperative learning--excessive classroom noise produced by group work. An overwhelming number of students (36/50 or 74%) answered this survey question by disagreeing or strongly disagreeing with the statement. Those who disagreed, 25 students, and those who strongly disagreed, 11 students, with the statement did so for a number of reasons. Five felt "The only noise was when we talked in groups." Ten believed "They kept their low voices all the time," and three thought, "We were very quiet or worked quietly and shared answers quietly." Students who were in dispute (6) with the majority stated, "It got loud" or "Sometimes it got loud." There were only seven students who had no opinions and therefore also offered no comments.

Item Thirteen. Statement thirteen, "I learned more computer skills since I was responsible for teaching my classmates," saw 28 students agreeing with the statement. The following reasons were given as a response to the question. six believed "It helped everyone learn." four felt that "When I help someone learn, it makes me remember better," and (c) individual comments were "I did not want anyone to think I did not know anything," "I was a group leader and I had to make sure everyone had the correct information--so I had to study." Twelve students had no opinion and were not concerned with teaching "Because we worked as a team," or "I was not responsible for teaching my teammates," or "I wanted to learn more on my own not because of my teammates." Eight students disagreed with the norm and their reasoning centered on: "My group worked as

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individuals," or "Some people did not do their share," or "I was responsible for learning, not teaching." A few felt ". . . they were imposed upon by their teammates."

Conclusion

The conclusions that can be reached from the data analysis are that:

1) There was a significant relationship between cooperative learning and the students' academic achievement. In the final analysis, high skilled computer students would learn anyway no matter the methodology employed. There appeared to be no apparent disadvantage to higher skilled computer students working in cooperative learning groups and their skills were re-enforced by explaining to others students the "How To" approach to learning.

2) There was no significant enhancement based on group demographics and gender on the learning of computer skills.

3) There was a significant increase between groups and Social-Economic-Status (SES) in the learning of computer skills.

4) There was a significant increase in the learning of computer skills between group and academic ability.

The research did re-affirmed the research conducted by Feldhusen (1989) which indicated that high-achieving students do not like working in small heterogeneous teams. Feldhusen also found that these same students felt used by their teammates, especially if their teammates were less successful in the classroom. The research initially found strong resistance to cooperative learning by these high-achieving students.

There are many positive effects of using cooperative learning on students and these findings offer insight for educational researchers and practitioners. The findings of

the study did show that the gains that were of the cognitive domain. The students enjoyed working with partners (teammates) and taking a virtual field trip to learn computers kills. The lesson made the learning more relevant to what the students wanted to learn "how to travel the web."

Students who do not have access to a computer at home and thus made up a large portion of the lower skilled were able to close the gap in ability on their more experienced classmates during this learning project. The significance of this information is that since they were unable to practice these skills at home peer tutoring allowed them to increase their skills while in the computer lab. Working in small groups allowed them to understand how to be successful on the computer. These weaker skilled students were able to correctly navigated the Internet and take the Virtual Field Trip and still be successful on the post project exam. The conclusion that can be inferred from the cognitive aspects of cooperative learning centers is that the actual increase in computer skills was more visible rather than the academic knowledge that test usually measure.

The amount of student participation increased in those students involved in the project. The usual off-task student behavior, found in many traditional classrooms, was not prevalent during the project. Therefore, on-task behavior was re-enforced by peer pressure and the need to be responsible to their teammates. The cooperative learning requirement for small teams that insisted on positive interdependence made sharing a must. It has been noted that the more active the students are in their own education the more likely these students are to be successful.

Student responses from the interviews and the survey confirmed that most students had an increased interest and success in learning new computer skills. Deutsch

(1949) has indicated that the students who see themselves as successful will be successful and students who are interested in learning will learn.

Implications

The value of this research to education is directly dependent upon the need and usage by practitioners. One of the main purposes of this research was to provide new knowledge to the profession on cooperative learning and to offer practical implications for practitioners of education.

Student Implications

One of the implications from this study was the fact that students, who normally did not want classmates to know that they lacked computer skills, were encouraged to learn. These students were facilitated to learn these skills both by the teacher's active facilitation in the classroom and the face-to-face peer pressure derived from small team interaction. The students who looked to other students for assistance in their search for the correct answers where able to find classmates who were willing to help.

Another implication comes from the development of social skills in the middle school students much the same way they are developed in elementary students. The students found working with other students in small groups improved their like of and trust in their classmates and supplied the necessary social stimulus that middle school students crave.

The development of an enjoyment for learning through cooperative learning as opposed to traditional classrooms is another implication. The students felt that they were learning more in the cooperative learning classes, thus the students were more attentive,

worked better, and stayed on task longer in direct support of the intellectual and exploratory nature of adolescent students.

Another implication for students is the placing of the responsibility for learning on the students where it belongs. Cooperative learning encourages them to seek help from other sources such as fellow students, texts, or outside resources before looking for the answer from the teacher.

The positive impact of cooperative learning for students extends to the gifted and high skilled students, which supports the work of Feldhusen (1989). These students tend to know how to achieve higher results and are better at accomplishing these goals than their classmates. These students need to be able to learn to work with all the students in their classes. This goes against the current research that cooperative learning is detrimental to high achievers, but it also gives them an avenue to develop the skills necessary to learn how to work cooperatively with other students.

Implication of Diverse Student Relations

An important impact on teaching and diverse relationships resulting from this study is the importance of frequency. The more a student works at something the better (s)he is at it. The same holds true when working to develop relationships. The more students work with students of other races the more likely they are to learn how to work with them and learn from them. Cooperative learning allows students to work with members of other races as well as members of the opposite gender. The ability to work in diverse groups is a prerequisite for working in the real world. The sooner students develop this skill the more successful they will be in the "real world" that exists outside the classroom. This applies to an area that is extremely important to middle school

students and the physical changes that are taking place and thus the teasing that takes place during this period. Their ability to work with, understand, and treat ethically their peers is a lesson that needs further treatment at this age level.

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APPENDIX A

STEP	PROCEDURE
Week One	Teams select country to visit.
Week Two	Find and rate site for acceptability. (Utilizing rubric developed by class, Appendix D).
Week Three	Students and teacher create KWL Chart. (See Appendix E)
Week Four	Determine questions to attain from site. (See Appendix F)
Week Five	Visit site answering questions
Week Six	Teams navigate the web address
Week Seven	Teams select correct answers to questions
Week Eight	Team presentations of VFT (Graded on Rubric established by teacher)
Week Nine	Individual semester VFT Web Exam (Each student is responsible for navigating the Internet to apply the computer skills learned during the lesson).

APPENDIX B
Attitudinal Survey of
Students in Cooperative Learning Project

Please read the following statements concerning the cooperative learning project that you have just completed. Please indicate your agreement or disagreement with the statement read by circling the response that best describes your feelings about the cooperative learning project. If you strongly agree with the statement circle STRONGLY AGREE. If you only agree with the statement circle AGREE. If you have no opinion about the statement circle NO OPINION. If you disagree with the statement circle DISAGREE. If you strongly disagree with the statement circle STRONGLY DISAGREE. **Below each statement please write briefly why you agree, disagree or have no opinion concerning the statement**. Your participation in this project is greatly appreciated.

1) I learned more computer skills in small cooperative groups than in a regular computer lab setting.

A)STRONGLY AGREE
B)AGREE
C)NO OPINION
D)DISAGREE
E)STRONGLY DISAGREE

WHY?_____

_____

_____

2) I enjoyed working on the computer with other students in small cooperative groups more than I would have enjoyed working on the computer by myself.

A)STRONGLY AGREE
B)AGREE
C)NO OPINION
D)DISAGREE
E)STRONGLY DISAGREE

WHY?_____

_____

_____

3) The small cooperative group activities allowed me to learn quicker and retain more for the computer test.

A)STRONGLY AGREE
B)AGREE
C)NO OPINION
D)DISAGREE
E)STRONGLY DISAGREE

WHY?_____

_____

_____

4) I felt my team mates and I learned from each other.

A)STRONGLY AGREE
B)AGREE
C)NO OPINION
D)DISAGREE
E)STRONGLY DISAGREE

WHY?_____

_____

_____

5) I thought the competition between groups was appropriate.

A)STRONGLY AGREE
B)AGREE
C)NO OPINION
D)DISAGREE
E)STRONGLY DISDAGREE

WHY?_____

_____

_____

6) I would like to see small cooperative learning groups used in more of my classes.

A)STRONGLY AGREE
B)AGREE
C)NO OPINION
D)DISAGREE
E)STRONGLY DISAGREE

WHY?_____

_____

_____

7) I thought using small cooperative groups made learning computer skills boring.

A)STRONGLY AGREE
B)AGREE
C)NO OPINION
D)DISAGREE
E)STRONGLY DISAGREE

WHY?_____

_____

_____

8) I believe I was taken advantage of by being in small groups because others in my group expected me to do the work.

A)STRONGLY AGREE
B)AGREE
C)NO OPINION
D)DISAGREE
E)STRONGLY DISAGREE

WHY?_____

_____

_____

9) My opinion of some of my classmates changed in a positive way because of the small cooperative group that I participated in.

A)STRONGLY AGREE
B)AGREE
C)NO OPINION
D)DISAGREE
E)STRONGLEY DISAGREE

WHY?_____

_____

_____

10) I learned to work better with diverse students in the small cooperative groups.

A)STRONGLY AGREE
B)AGREE
C)NO OPINION
D)DISAGREE
E)STRONGLY DISAGREE

WHY?_____

_____

_____

11) I like the way my computer teacher taught his Virtual Field lesson, using small cooperative groups, better than the way my other classes were taught.

A)STRONGLY AGREE
B)AGREE
C)NO OPINION
D)DISAGREE
E)STRONGLY DISAGREE

WHY?_____

_____

_____

12) I thought the small cooperative groups were too noisy during class.

A)STRONGLY AGREE
B)AGREE
C)NO OPINION
D)DISAGREE
E)STRONGLY DISAGREE

WHY?_____

_____

_____

13) I learned more computer skills because I was responsible for teaching my team mates.

A)STRONGLY AGREE
B)AGREE
C)NO OPINION
D)DISAGREE
E)STRONGLY DISAGREE

WHY?_____

_____

_____

APPENDIX C

Computer Lab Rules

1) No Food or Drink in the Computer Lab

2) Do not Go To Any Site Without Permission

3) Read all Instructions Before Beginning the Project

4) Raise Hand if You Need Help

5) Return The Computer to Desk Top Mode When Finish

6) Slide Chair Under Station and Clean Up Around Your Station

APPENDIX D

World Wide Web Site
Evaluation Instrument

Find a site on the web location http://surfaquarium.com/vft.htm that fits your group's country. Critique the site using the following criteria.

1) Actual address of the web site you choose too visit.

_____.

2) What is the basic thrust of the site (how appropriate are the ideas and content)

_____

3) How is the site organized: a) layout
b) structure of the page

4) Is the site presented in such a manner that it is appealing and age approprioate:

5) Do links work and go where they are supposed to go?

6) How might the site support the student learning and add educational value to social studies?

7) Is the site user friendly?

APPENDIX E

KWL CHART ON
RESPECTIVE COUNTRIES

What Do You Know	What Do You Want to Know	What Did You Learn

APPENDIX F

DIRECTIONS

1) Student groups sit at assigned computer.

2) The student operator types in the web address of the country selected.

3) The student recorder then records all answers to the questions for the group as they navigate the web site.

4) The group leader assures that all members stay on task and have an opportunity to perform one of the other tasks.

SAMPLE QUESTIONS

Answer the following questions as you navigate the web and travel on your Virtual Field Trip.

1) What is the first place you locate on the web site called?

2) What are some of the more famous sites you could visit on your field trip?

3) Choose three places on your trip that most American tourists would probably want to visit and print information about those places.

4) Choose tree places that most American tourists would not visit and print information about those places.

5) Develop questions that you may use to quiz students after your presentation.

APPENDIX G

GROUP TASK ASSIGNMENTS

Group A: What questions do you want to ask in order to answer the question, "What do you want to know about this country?"

Group B: What plans do you need to make to assure your trip to be successful?

Group C: What criteria will you use to choose the country for your Virtual Field Trip?

Group D: How are you going to present your project to the rest of the class?

APPENDIX H

RUBRIC FOR PRESENTATION OF PROJECT

A score of 4 will be earned if the group presenting demonstrates

a) Creativity in their presentation of their country
b) Group participation in the presentation
c) The effective use of visual aids
d) The accuracy of their information

A score of 3 will be earned if the group presenting demonstrates

a) Group participation in the presentation
b) The effective use of visual aids
c) The accuracy of their information

A score of 2 will be earned if the group presenting does not demonstrates

a) Group participation in the presentation
b) The effective use of visual aids
c) Or the accuracy of their information.